P. O. Box 573, Tucson, Ariz.
June 2, 1951

Dear Herb,

I've been meaning to write you for some time; now comes your letter of the 30th ult., and I believe that makes two of yours I am due to answer. But let me take this up with you, first, which was to be the subject of an independent communication.

The attached diagrams--the first I have drawn in years, I'll wager, might be entitled the evolution of a Galvanic instrument. For purposes of inoization I wanted a "cabinet" to deliver between 20 and 40 mills. The resistance of the "load" I don't know, for the output leads go to dispersive pads--wet felt electrodes--placed on either side of the trunk of the body. My original specifications called for a 20 cell LeClanche battery--at 1. 4 v. ea. I believe.

Anyway after consulting with a local electronics genius, I got the device made up as represented in Fig. 1 attached. It delivered, but I couldn't get the current rate down to much less than 20 mills, which is too much of a shock to the patient at the off and on switching and of course at times of polarity reversing--for I wish to transfer ions in both directions.

His modification, after some talk from me about shunt circuit, is shown in Fig. 2. In this set-up I could get no current through the normal load, although performance was satisfactory with a "short" load. (I have a feeling the series resistance was left in the circuit because it, as a variable resistance, was mounted on the panel.)

Next I took a hand and made some changes.

First, I shorted out the fixed resistor, of 600 ohms, and the fuse blew. Then I cut out both the fixed resistor and the fuse, and the Mallory 10PX went up in smoke. It, I suppose, is a 10, 000 ohm device and is not of the heavy duty type. I suppose the M1PX is a 1, 000 ohm unit. Right?

Then I caused to be substituted a "5M" potentiometer, which seems of heavier duty type, and happened to be available in the office where we had taken my Galvanic. It is in shunt to the battery, and I have cut out the fusing and fixed resistor.

Now I get the current flow I wish, with regulation almost entirely by adjusting the shunt unit, although I left the series rheostat in the circuit.

Mostly I want to know if the ultimate design is faulty. Is the shunt arrangement the desirable one, or isn't there considerable unnecessarry drain. Can you determine if the 5x "5M" unit---I suppose 5, 000 ohms--happened to be the correct value.

I don't know how to go about a simple problem like this; I was unable to pick up a used Galvanic, of which there are models whose D. C. source is a 45 v. B battery. From such a unit one could see what sort of a resistance is used, its value, and whether in shunt--which latter seems the likely way for correct regulation. Or could a series variable resistance be used?

I am interested in using the enzyme trypsin, introduced to reduce "pathogen" to a simpler state, so it may be more readily eliminated. My specifications come from a book by a old Los Angeles doctor of a couple of generations back. Lately, the medics at Ohio State have been using the same enzyme in pleural pus cases;; of course they inject it. But our purpose is broader; I want to disperse it widely, to reach the clogged capillaries in the thorax and abdomen. It is the therapeutics to associate with the pathogen theory of Powell and the mycrozymal theory of Bechamp, about which I have written and perhaps have sent you reprints.

I wish you would answer this right away. We are leaving for San Diego Tuesday, and I will get your letter forwared there and answer then in detail your earlier letters.

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